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10/07/2005

Hua Chen

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HONEYWELL/GRIECCI

Patent Services

101 Columbia Road

P.O.Box 2245

Morristown, NJ 07962

EXAMINER

VERDIER, CHRISTOPHER M

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patentservices-us@honeywell.com

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/552,376
Filing Date: October 07, 2005
Appellant(s): CHEN, HUA

John A. Griecci
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 21, 2010 appealing from the Office action mailed November 6, 2009.

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(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1, 4-6, 9, and 11-18.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

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(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

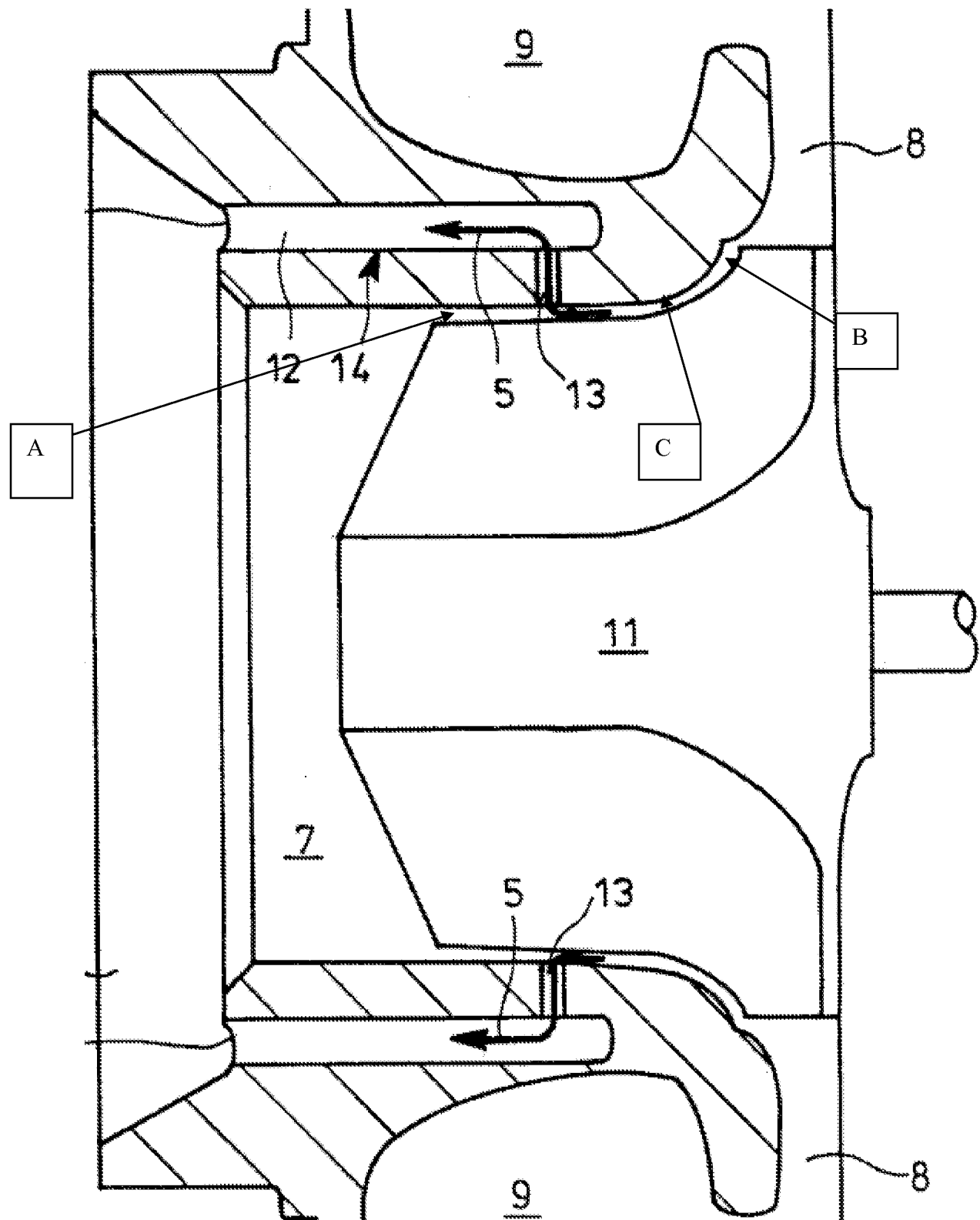
5,246,335	MITSUBORI et al.	9-1993
4,395,197	YOSHINAGA et al.	7-1983
3,893,787	JONES	7-1975
3,824,029	FABRI et al.	7-1974
2,471,174	TRUMPLER	5-1949

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

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Claims 1, 15/1, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsubori 5,246,335 (figure 2). Disclosed is a compressor comprising a compressor wheel having a hub 11, unnumbered free-ended compressor blades and being mounted for rotation on an unnumbered shaft, each blade being characterized by a free-ended outer edge, an upstream leading edge and a downstream trailing edge, and a shroud 4 mounted adjacent and around the outer edges of the compressor blades and defining a gas flow path between the shroud and the hub from a compressor inlet 6 to a diffuser outlet 8, through which the blades rotate with respect to the shroud, wherein in cross-section the shroud forms a surface A along the flow path, the surface being characterized by a profile that includes a relative discontinuity B in the region of the trailing edge, wherein the discontinuity forms a downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the blocking face extending across the flow path to form a sharp edge connecting the blocking face to a smoothly curving surface C along the gas flow path upstream of the blocking face. The compressor is included with a turbocharger. The discontinuity is in the form of a groove. Note the annotated figure below.

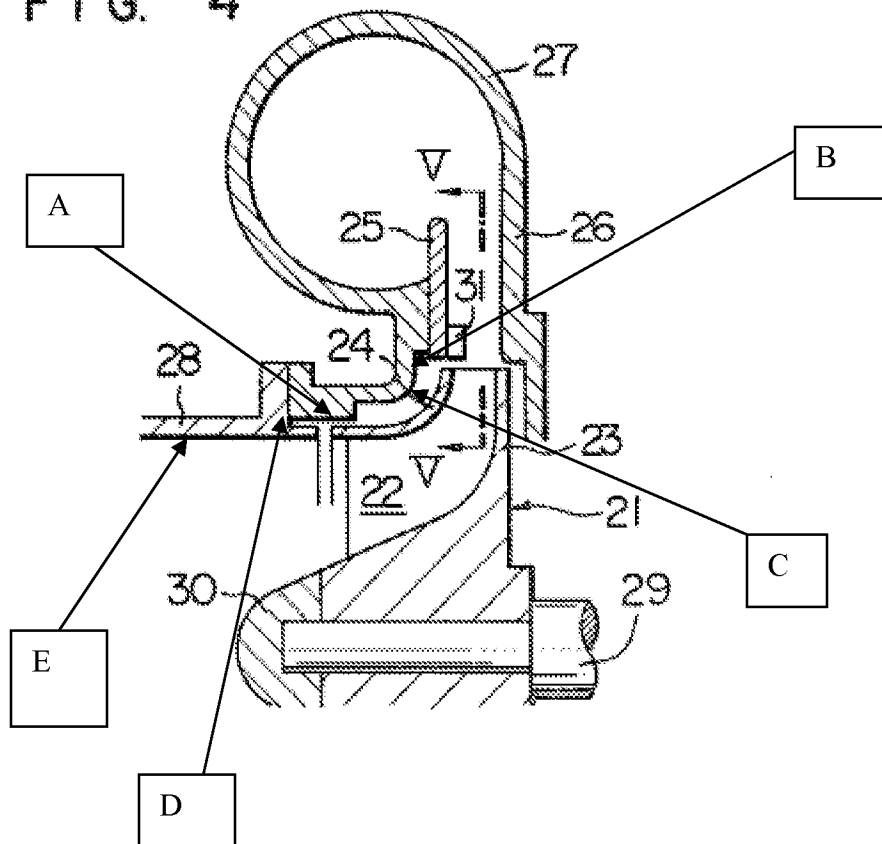


Claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197 in view of Jones 3,893,787. Yoshinaga disclosed a compressor substantially as claimed, comprising a compressor wheel 21 having a hub 1, compressor blades 22 and being mounted for rotation on a shaft 29, each blade being characterized by an outer edge, an upstream leading edge and a downstream trailing edge, and a shroud 27/28 mounted adjacent (note that adjacent does not require that two elements be immediately next to one another) and around the outer edges of the compressor blades and defining a gas flow path between the shroud and the hub from a compressor inlet to a diffuser outlet, through which the blades rotate with respect to the shroud, wherein in cross-section the shroud forms a surface A along the flow path, the surface being characterized by a profile that includes a relative discontinuity B in the region of the trailing edge, wherein the discontinuity forms a downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the blocking face extending across the flow path to form a sharp edge connecting the blocking face to a smoothly curving surface C along the gas flow path upstream of the blocking face. The cross-section profile of the shroud surface along the flow path is further characterized by a second relative discontinuity D that is in the region of the leading edge, wherein the second relative discontinuity forms a second-discontinuity downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the second-discontinuity blocking face extending across the flow path to form a second-discontinuity sharp edge connecting the second blocking face to a second-discontinuity smooth surface E upstream of the second-discontinuity blocking face. The

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second discontinuity is located upstream of the leading edge of the wheel blades. The second discontinuity is spaced from the leading edge of the wheel blades by a distance of the same order as the axial clearance of the trailing edge from the compressor housing. The or each downstream-facing blocking face comprises a planar surface cut into the curving surface. The second-discontinuity downstream-facing blocking face comprises a planar surface cut into the curving surface, and the planar surface is perpendicular to the axis of the shaft. The radial extent of the second discontinuity is of the same order as the radial clearance between the trailing edge and the housing. The sizes of the first and second discontinuities are closely similar. The discontinuity is in the form of a groove. The shapes of the first and second discontinuities are closely similar. Concerning claim 15, the term “turbocharger” is recited in the preamble of the claim and has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Note the annotated figure below.

However, Yoshinaga does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 24.

FIG. 4

Jones shows a compressor 1 having a compressor wheel having a hub 4 with free-ended compressor blades 6 mounted for rotation on a shaft 12, each blade being characterized by a free-ended outer edge, an upstream leading edge and a downstream trailing edge. The inside of a stationary shroud 8 may be provided with grooves 20. The flowpath along the shroud is non-uniform. Therefore, Jones teaches the combination of a compressor having a shroud having a non-uniform flowpath and compressor blades that are free-ended, with each blade having a free-ended outer edge, for the purpose of reducing rotating mass of the compressor wheel.

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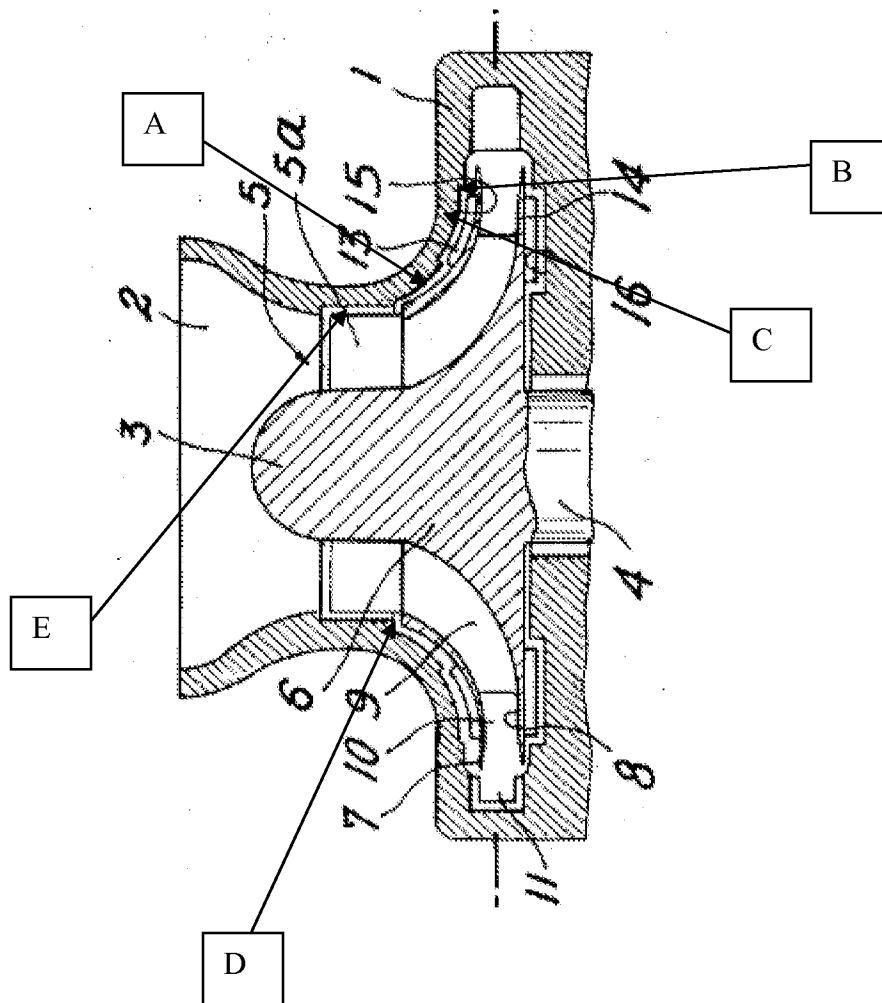
It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Yoshinaga such that the compressor blades are free-ended, with each blade having a free-ended outer edge, as taught by Jones, for the purpose of reducing rotating mass of the compressor wheel.

Claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 in view of Jones 3,893,787. Fabri discloses a compressor substantially as claimed, comprising a compressor wheel 3/6 having a hub 3 and compressor blades 9 and being mounted for rotation on a shaft 4, each blade being characterized by an outer edge, an upstream leading edge and a downstream trailing edge, and a shroud 1 mounted adjacent (note that adjacent does not require that two elements be immediately next to one another) and around the outer edges of the compressor blades and defining a gas flow path between the shroud and the hub from a compressor inlet to a diffuser outlet, through which the blades rotate with respect to the shroud, wherein in cross-section the shroud forms a surface A along the flow path, the surface being characterized by a profile that includes a relative discontinuity B in the region of the trailing edge, wherein the discontinuity forms a downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the blocking face extending across the flow path to form a sharp edge connecting the blocking face to a smoothly curving surface C along the gas flow path upstream of the blocking face. The cross-section profile of the shroud surface along the flow path is further characterized by a second relative discontinuity D that is in the region of the leading edge, wherein the second relative discontinuity forms a second-discontinuity downstream-facing blocking face adapted to

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impede an upstream flow of gas between the shroud and the wheel, the second-discontinuity blocking face extending across the flow path to form a second-discontinuity sharp edge connecting the second blocking face to a second-discontinuity smooth surface E upstream of the second-discontinuity blocking face. The second discontinuity is located upstream of the leading edge of the wheel blades. The or each downstream-facing blocking face comprises a planar surface cut into the curving surface. The second-discontinuity downstream-facing blocking face comprises a planar surface cut into the curving surface, and the planar surface is perpendicular to the axis of the shaft. The sizes of the first and second discontinuities are closely similar. The shapes of the first and second discontinuities are closely similar. Concerning claim 15, the term “turbocharger” is recited in the preamble of the claim and has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Note the annotated figure below.

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However, Fabri does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 7.

Jones shows a compressor 1 having a compressor wheel having a hub 4 with free-ended compressor blades 6 mounted for rotation on a shaft 12, each blade being characterized by a free-ended outer edge, an upstream leading edge and a downstream trailing edge. The inside of a stationary shroud 8 may be provided with grooves 20. The flowpath along the shroud is non-uniform. Therefore, Jones teaches the combination of a compressor having a shroud having a

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non-uniform flowpath and compressor blades that are free-ended, with each blade having a free-ended outer edge, for the purpose of reducing rotating mass of the compressor wheel.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Fabri such that the compressor blades are free-ended, with each blade having a free-ended outer edge, as taught by Jones, for the purpose of reducing rotating mass of the compressor wheel.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 and Jones 3,893,787 as applied to claims 1 and 4, respectively above, and further in view of Trumpler 2,471,174. The modified compressor of Fabri shows a compressor substantially as claimed as set forth above, including the blocking face at B forming a second sharp edge on an opposite side of the blocking face from the first sharp edge, and including the first-discontinuity blocking face forming a second sharp edge on an opposite side of the first-discontinuity blocking face from the first sharp edge of the first-discontinuity blocking face, but does not show that the second sharp edge connects the blocking face to a second smoothly curving surface that is downstream of the blocking face.

Trumpler shows a centrifugal compressor having a blocking face (unnumbered, attached to C and opposite 34a) forming a second sharp edge on an opposite side of the blocking face from a first sharp edge, the second sharp edge connecting the blocking face to a smoothly curving surface 5a downstream of its respective discontinuity, for the purpose of providing recirculation to prevent surge.

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It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified compressor of Fabri such that the second sharp edge connects the blocking face to a second smoothly curving surface downstream of its blocking face, as taught by Trumpler, for the purpose of providing recirculation to prevent surge.

Claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197. Yoshinaga discloses a compressor substantially as claimed as previously set forth above, but does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 24.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Yoshinaga such that the compressor blades are free-ended, with each blade having a free-ended outer edge, for the purposes of reducing the rotating mass and cost of the compressor wheel, providing flexibility to the compressor wheel by virtue of the free-ended blades, and changing the flowpath through the compressor shroud. Note that omission of an element and its function is obvious if the function of the element is not desired. *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989); *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). Since the mass, cost, flexibility and flowpath through the compressor shroud are changed, the above case law applies.

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Claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029. Fabri discloses a compressor substantially as claimed as previously set forth above, but does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 7.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Fabri such that the compressor blades are free-ended, with each blade having a free-ended outer edge, for the purposes of reducing the rotating mass and cost of the compressor wheel, providing flexibility to the compressor wheel by virtue of the free-ended blades, and changing the flowpath through the compressor shroud. Note that omission of an element and its function is obvious if the function of the element is not desired. *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989); *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). Since the mass, cost, flexibility and flowpath through the compressor shroud are changed, the above case law applies.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 as applied to claims 1 and 4, respectively above, and further in view of Trumpler 2,471,174. The modified compressor of Fabri shows a compressor substantially as claimed as set forth above, including the blocking face at B forming a second sharp edge on an opposite side

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of the blocking face from the first sharp edge, and including the first-discontinuity blocking face forming a second sharp edge on an opposite side of the first-discontinuity blocking face from the first sharp edge of the first-discontinuity blocking face, but does not show that the second sharp edge connects the blocking face to a smoothly curving surface downstream of its respective discontinuity

Trumpler shows a centrifugal compressor having a blocking face (unnumbered, attached to C and opposite 34a) forming a second sharp edge on an opposite side of the blocking face from a first sharp edge, the second sharp edge connecting the blocking face to a smoothly curving surface 5a downstream of its respective discontinuity, for the purpose of providing recirculation to prevent surge.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified compressor of Fabri such that the second sharp edge connects the blocking face to a smoothly curving surface downstream of its respective discontinuity, as taught by Trumpler, for the purpose of providing recirculation to prevent surge.

(10) Response to Argument

Concerning the rejection of claims 1, 15/1, and 18 under 35 U.S.C. 102(b) as being anticipated by Mitsubori 5,246,335 (figure 2) (Ground 1, argument a), Appellant has stated that in referring to Appellant's figure A on page 11 of the Appeal Brief, the sharp edge 105 inherently must be at the upstream side of the downstream-facing blocking face 101. Appellant

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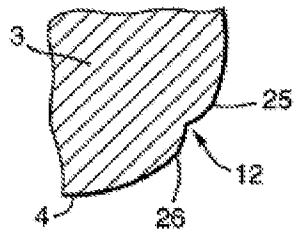
has referred to the examiner's annotated figure of Mitsubori, and has provided an annotated figure of Mitsubori labeled as figure B on page 12 of the Appeal Brief. Appellant's argument is that the sharp edge 501 labeled as figure B on page 12 of the Appeal Brief is on the downstream side of the downstream-facing blocking face, and that Mitsubori fails to disclose a sharp edge connecting a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. This argument is respectfully disagreed with, because Mitsubori (see the examiner's annotated figure 2) discloses a sharp edge (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure below) connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Mitsubori still extends across the gas flow path, since it extends perpendicular to the axis of rotor 11.

Appellant (see page 7, lines 10-15 of the Appeal Brief in the "Summary of Claimed Subject Matter" section) states "The present invention provides a small structural change that can have a significant reduction in the occurrence of surge. It features a discontinuity in the form of a downstream-facing surface on the shroud at the downstream edge of the blades. The surface forms a sharp edge at its upstream (i.e., inner) end. As is described on second half of page 5 of the application, this surface provides an aerodynamic block to the reverse flow of air that occurs during a surge, and thus reduces the occurrence of surge." The second half of Appellant's specification, the second to last paragraph states "Figures 4a to 4h illustrate eight possible shapes for the cross-sectional contour of the shroud 4 of the housing 3, in the region of the discontinuity or step 12. Many other possibilities will be evident to a person skilled in the art."

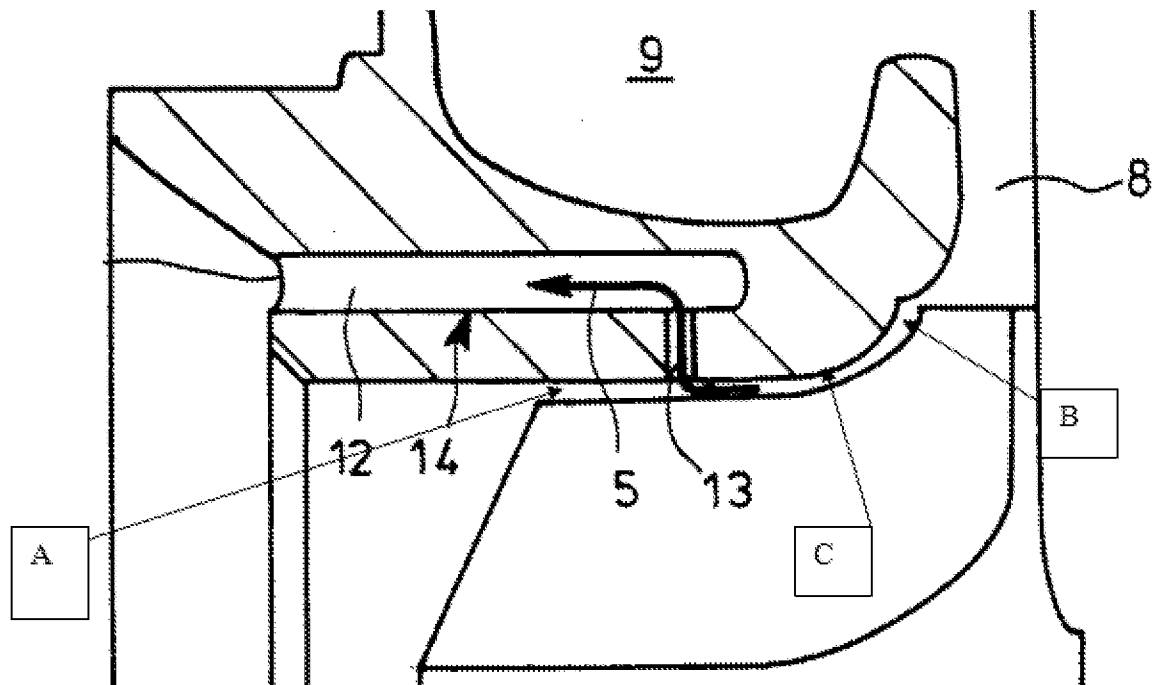
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Therefore, figure 4a of Appellant's application is encompassed by the instant claims. Figure 4a of Appellant's application is reproduced below:

Fig. 4a.



Annotated figure 2 of Mitsubori is reproduced below:



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Again, Mitsubori (figure 2) discloses a sharp edge (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure below) connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Mitsubori still extends across the gas flow path, since it extends perpendicular to the axis of rotor 11.

Appellant has argued concerning the rejection of claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197 in view of Jones 3,893,787 (Ground 2, argument b) that in referring to Appellant's figure A on page 11 of the Appeal Brief, the sharp edge 105 inherently must be at the upstream side of the downstream-facing blocking face 101. Appellant has referred to the examiner's annotated figure of Yoshinaga and has argued that as replicated in Appellant's figure C on page 12 of the Appeal Brief, the discontinuity B connects a smoothly curving surface upstream of the discontinuity to an upstream-facing face, not a downstream-facing face and that Yoshinaga fails to disclose a sharp edge that connects a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. The examiner respectfully disagrees, because Yoshinaga discloses a sharp edge in the examiner's annotated figure (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure above) connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Yoshinaga extends across the gas flow path.

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Appellant has also argued concerning the rejection of claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197 in view of Jones 3,893,787 (Ground 2, argument d) that Yoshinaga does not disclose a blocking face that is in the recited gas flow path, and that the blocking face identified by the examiner in Yoshinaga is on a housing wall outside the shroud of a shrouded turbine wheel. The examiner respectfully disagrees with these arguments, because Yoshinaga discloses a relative discontinuity B in the examiner's annotated figure, which forms a downstream-facing blocking face. The discontinuity in Yoshinaga is clearly located along the gas flow path gas flow path through which the compressor blades 22 are rotating to pressurize the air, as one skilled in the art would readily recognize from the figures thereof. With regard to Appellant's argument that this assertion completely discounts or ignores the meaning of the word shroud, and attempts to call two wholly separate regions of space a single gas flow path, even though one of them does not meet the recited limitations, the examiner respectfully disagrees. The term "shroud" is well-known to persons of ordinary skill in the art, and one of ordinary skill in the art would recognize element 27/28 of Yoshinaga as a shroud. The fact that these references also disclose impellers which also have a shroud does not disqualify element 27/28 of Yoshinaga as being a shroud. Further, the rejection does not attempt to call two wholly separate regions of space a single gas flow path as Appellant has argued, because the above-identified discontinuity B in Yoshinaga is clearly located along the gas flow path gas flow path through which the compressor blades 22 are rotating to pressurize the air, as one skilled in the art would readily recognize from the figures thereof. With regard to Appellant's arguments that the discontinuity of Yoshinaga is not in the claimed flow path, and

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the rejection appears to allege that the gas flow path includes both the path passing within the shroud and an entirely separate path extending through small gaps at either end of the shroud and passing outside the shroud between the shroud and the housing wall, that the second pathway is not within the shroud, and no blades rotate through that pathway, and that a person skilled in the art would not reasonably consider the housing wall to be a shroud, or a pathway of gas leaking around the ends of a rotating shroud to be part of a gas flow path between the shroud and the hub, the examiner respectfully disagrees. Discontinuity B of Yoshinaga is located in the flow path, as set forth above. Again, the term “shroud” is well-known to persons of ordinary skill in the art, and one of ordinary skill in the art would recognize element 27/28 of Yoshinaga as a shroud. The fact that Yoshinaga also discloses an impeller which also has a shroud does not disqualify element 27/28 of Yoshinaga as being a shroud.

Appellant has also argued concerning the rejection of claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197 in view of Jones 3,893,787 (Ground 2, argument e) that Yoshinaga does not disclose a downstream facing face, referring to figure C on page 12 of the Appeal Brief. Appellant has argued that the added line showing the direction of the wall in the vicinity of the trailing edges shows that wall faces directly across the flow, and that there is no portion of the passageway that is angled to suggest that the wall is in a downstream-facing direction. The examiner respectfully disagrees with this argument, because the discontinuity B in Yoshinaga is located towards the outlet side of the compressor, and is broadly considered as being in a downstream-facing direction. Note that during patent

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examination, the pending claims must be interpreted as broadly as their terms reasonably allow.

In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). Further, it is improper to import claim limitations from the specification. MPEP 2111.01.

Appellant has argued concerning the rejection of claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 in view of Jones 3,893,787 (Ground 3, argument c) that in referring to Appellant's figure A on page 11 of the Appeal Brief, the sharp edge 105 inherently must be at the upstream side of the downstream-facing blocking face 101. Appellant has referred to the examiner's annotated figure of Fabri and has argued that as replicated in Appellant's figure D on page 12 of the Appeal Brief, the discontinuity B connects a smoothly curving surface upstream of the discontinuity to an upstream-facing face, not a downstream-facing face and that Fabri fails to disclose a sharp edge that connects a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. The examiner respectfully disagrees, because Fabri in the examiner's annotated figure discloses a sharp edge (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure above) connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Fabri still extends across the gas flow path, since it extends perpendicular to the axis of rotor 3.

Appellant has argued concerning the rejection of claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Fabri

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3,824,029 in view of Jones 3,893,787 (Ground 3, argument d) that Fabri does not disclose a blocking face that is in the recited gas flow path, and that the blocking face identified by the examiner in Fabri is on a housing wall outside the shroud of a shrouded turbine wheel. The examiner respectfully disagrees with these arguments, because Fabri discloses a relative discontinuity B in the examiner's annotated figure, which forms a downstream-facing blocking face. The discontinuity in Fabri is clearly located along the gas flow path gas flow path through which the compressor blades 9 are rotating to pressurize the air, as one skilled in the art would readily recognize from the figures thereof. With regard to Appellant's argument that this assertion completely discounts or ignores the meaning of the word shroud, and attempts to call two wholly separate regions of space a single gas flow path, even though one of them does not meet the recited limitations, the examiner respectfully disagrees. The term "shroud" is well-known to persons of ordinary skill in the art, and one of ordinary skill in the art would recognize element 1 of Fabri as a shroud. The fact that Fabri also discloses an impeller which also has a shroud does not disqualify element 1 of Fabri as being a shroud. Further, the rejection does not attempt to call two wholly separate regions of space a single gas flow path as Appellant has argued, because the above-identified discontinuity B in Fabri is clearly located along the gas flow path gas flow path through which the compressor blades are rotating to pressurize the air, as one skilled in the art would readily recognize from the figures thereof. Appellant's argument that Fabri identifies element 24 as a shroud is unclear. There is no element "24" in Fabri. To the extent that the argument is understood, the term "shroud" is well-known to persons of ordinary skill in the art, and one of ordinary skill in the art would recognize element 1 of Fabri as a shroud. The fact that Fabri also discloses an impeller which also has a shroud does not

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disqualify element 1 of Fabri as being a shroud. With regard to Appellant's argument that the discontinuity of Fabri is not in the claimed flow path, and the rejection appears to allege that the gas flow path includes both the path passing within the shroud and an entirely separate path extending through small gaps at either end of the shroud and passing outside the shroud between the shroud and the housing wall, that the second pathway is not within the shroud, and no blades rotate through that pathway, and that a person skilled in the art would not reasonably consider the housing wall to be a shroud, or a pathway of gas leaking around the ends of a rotating shroud to be part of a gas flow path between the shroud and the hub, the examiner respectfully disagrees. Discontinuity B of Fabri is located in the flow path, as set forth above. Again, the term "shroud" is well-known to persons of ordinary skill in the art, and one of ordinary skill in the art would recognize element 1 of Fabri as a shroud. The fact that Fabri also discloses an impeller which also has a shroud does not disqualify element 1 of Fabri as being a shroud.

Appellant has also argued concerning the rejection of claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 in view of Jones 3,893,787 (Ground 3, argument e) that Fabri does not disclose a downstream facing face, referring to figure D on page 12 of the Appeal Brief. Appellant has argued that the added line 311 showing the direction of the wall in the vicinity of the trailing edges shows that wall faces directly across the flow, and that there is no portion of the passageway that is angled to suggest that the wall is in a downstream-facing direction. The examiner respectfully disagrees with this argument, because the discontinuity B in Fabri in the examiner's annotated figure is located towards the outlet side of the compressor,

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and is broadly considered as being in a downstream-facing direction. Note that during patent examination, the pending claims must be interpreted as broadly as their terms reasonably allow.

In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). Further, it is improper to import claim limitations from the specification. MPEP 2111.01.

Appellant has argued concerning the rejection of claims 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 and Jones 3,893,787 as applied to claims 1 and 4, respectively above, and further in view of Trumpler 2,471,174 (Ground 4), that these arguments are the same as those made in Ground 3, above. The examiner respectfully disagrees with these arguments for the reasons set forth above. Appellant's arguments concerning Ground 4, argument c, argument d, and argument e that Fabri fails to disclose various claimed features are the same as Appellant's arguments c, d, and e above pertaining to Fabri, and are disagreed with for the reasons set forth above.

Appellant's arguments concerning the rejection of claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197 (Ground 5, arguments b, d, and e) are the same as Appellant's arguments b, d, and e above pertaining to Yoshinaga, and are disagreed with for the reasons set forth above.

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Appellant's arguments concerning the rejection of claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 (Ground 6, arguments c, d, and e) are the same as Appellant's arguments c, d, and e above pertaining to Fabri, and are disagreed with for the reasons set forth above.

Appellant's arguments concerning the rejection of claims 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 as applied to claims 1 and 4, respectively above, and further in view of Trumpler 2,471,174 (Ground 7) are that these arguments are the same as those made in Ground 6, above. The examiner respectfully disagrees with these arguments for the reasons set forth above. Appellant's arguments concerning Ground 7, argument c, argument d, and argument e that Fabri fails to disclose various claimed features are the same as Appellant's arguments c, d, and e above pertaining to Fabri, and are disagreed with for the reasons set forth above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Christopher Verdier/

Primary Examiner, Art Unit 3745

Conferees:

/Boyer D. Ashley/

Supervisory Patent Examiner, Art Unit 3724

/Michael Cuff/

Supervisory Patent Examiner, Art Unit 3741